# GROUND WATER MONITORING WORK PLAN ADDENDUM
# SAFETY-KLEEN (WICHITA) FACILITY
# WICHITA, KANSAS



safety-kleen
consulting

**Prepared by:**
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**April 4, 2000**

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BOULDER, COLORADO 80301

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# 1. INTRODUCTION

This document has been prepared as an Addendum to the RCRA Facility Investigation (RFI) Phase I Work Plan for the Safety-Kleen (SK) Wichita, Kansas facility, dated February 1999. As described in that work plan, a direct-push (or GeoProbe®) method of sampling soil and groundwater was implemented at the site in late 1999. In accordance with the Phase I work plan, this Addendum presents recommendations for a groundwater monitoring well network to be installed at the facility.

The objective of the scope of work described herein is to install a network of monitoring wells at the site that can provide consistent, reproducible groundwater quality data both on and adjacent to the facility. This scope of work will be followed by further on- and off-site soil and groundwater sampling to fully assess the extent of impacts originating from historical facility practices. The additional soil sampling and off-site groundwater sampling will be addressed in a future Phase I Work Plan Addendum.

# 2. SELECTED FINDINGS OF THE RFI

This Work Plan Addendum will briefly review some of the subsurface findings of the Phase I RFI conducted on the site in November/December 1999. The selected findings presented herein are intended to provide a framework for the rationale of the proposed monitoring well locations. The results will be presented in more detail in the future Phase I RFI Report.

As part of the fieldwork, five conductivity probes were driven (EB-1 through EB-5) in selected locations across the site. Figure 1 presents these probe locations and acts as an index for cross-sections interpreted from the conductivity probe data (Figures 2 - 4). Because no soil sampling was conducted in these conductivity probe points, and the lithology and groundwater levels have been inferred based upon the geotechnical data collected from conductivity probe points and the results of other data collected on and adjacent to the site. These interpretations will be further confirmed during implementation of the proposed scope of work described in this addendum.

The interpreted cross-sections suggest that the site is underlain by 10-17 feet of gravelly clay fill, underlain by 8 - 18 feet of sand. Below the sand lies a clay layer, approximately 2 - 6 feet thick,

which pinches out in the southwestern corner of the site. The clay is generally underlain by another 8 – 9 feet of sand, and 1 – 9 feet of weathered bedrock. In the southwestern corner of the site where the clay lens is not present, the fill extends to approximately 6 feet bgs, and the underlying sand unit is approximately 19 feet thick. Competent bedrock, which reportedly consists of the Wellington Shale, is encountered at depths ranging from 35 – 43 feet below ground surface (bgs). Groundwater levels, added to these cross-sections, were estimated based on the groundwater gradient map created from water elevations collected in December 1999 from both on-site and off-site wells (Figure 5). Groundwater is generally encountered on site between 12 and 17 feet bgs. The potentiometric map of groundwater elevations indicates a southeastward direction of groundwater flow across the site.

A summary table and figure of the volatile organic compounds (VOCs) detected in groundwater samples collected in November/December 1999 with the GeoProbe® are presented in Table 1 and Figure 6. Samples were collected from the five locations selected for the conductivity probes (EB-1 through EB-5) and three internal boring locations (B-21, B-31 and B-4). Groundwater samples were generally collected at three separate depths in each sampling location: the shallow, the mid-depth, and the deep portions of the unconsolidated, alluvial flow zone. The shallow samples were collected at the capillary fringe; the mid-depth samples were typically collected above the clay lens; and, the deep samples were collected just above the bedrock.

The groundwater analytical results indicate that concentrations of trichloroethene (TCE), cis 1,2-dichloroethene (cis 1,2-DCE), chloroform and carbon tetrachloride ($CCl_4$) are likely migrating on site from the upgradient direction at the mid-depth and deepest portions of the flow zone, based on the results of EB-3 and EB-4. These two probe locations are adjacent to the property boundary, and appear to be hydraulically upgradient of the site operations. These findings are consistent with historical data reported in Appendix E of the Work Plan (February 1999) for WND-32 and MW-14.

The highest concentrations of dissolved VOCs were observed in B-21, which is centrally located on the site, adjacent to the processing area and its related storage tanks, the truck bay area, and Building D, which contains overhanging storage tanks. The highest concentrations of VOCs occurred near the groundwater surface, which might indicate a potential historical source area. The concentrations of VOCs decreased significantly with depth in B-21, and decrease from the shallow to the mid-depth sample in almost every location. There was no observed evidence of the presence of non-aqueous phase materials perched atop the mid-depth clay unit nor the bedrock unit.

Only one groundwater sample was collected from B-31 (located in the northeastern portion of the site), due to apparent perched conditions at approximately 6 feet bgs. Elevated concentrations of cis 1,2-DCE, tetrachloroethene (PCE), TCE and vinyl chloride were observed in this location, and drilling was halted to avoid potential cross-contamination of the deeper water-bearing zone. Sampling points EB-1, EB-2, EB-5 and B-4, all located downgradient of site operations and adjacent to the property

boundaries, had elevated concentrations of VOCs. The highest concentrations were generally observed in the shallow portion of the flow zone; however, detectable concentrations were also identified at the mid-depth and deep portions of the flow zone. (The only exception was the deep sample in EB-5, which had no reported concentrations of VOCs.) The deep samples in three of the four downgradient sampling points yielded only those VOCs detected in upgradient wells.

A summary of the analytical results of soil samples collected in November/December 1999 RFI field effort with the GeoProbe is presented in Table 2. The locations of these data points are presented in Figure 7. The primary areas of concern based on the soil analytical results are the former paint can burial pit, the area south of building C near the loading ramp, the processing area, and the elevated storage tank area. Further soil sampling will be addressed in a future work plan addendum to assess the extent of the limited impacts observed in the vadose zone.

## 3. SCOPE OF WORK

Based upon the findings presented in this document, we are proposing to augment the current monitoring well locations at the facility. This will include the installation of four (4) monitoring well pairs and two single wells to assess groundwater quality in both upgradient and downgradient locations, and in two potential source areas on site. The upgrade will also include the abandonment of four existing wells that are in disrepair and/or are constructed in such a way as to limit the usefulness of data collected from them.

The proposed well locations are presented in Figure 5, along with the potentiometric map for December 1999. Based on our current understanding of the groundwater gradient, we propose to install one additional deep well to supplement the shallow wells that already exist on Union Pacific's rail yard to monitor the upgradient groundwater quality in the deeper portion of the alluvial water-bearing zone [SK-6(D)]. Seven wells are positioned in downgradient locations to monitor the groundwater quality migrating off-site [SK-1(S&D), SK-2(S&D), SK-3(S&D) and SK-4(S)]. The remaining wells [SK-5(S&D)] as well as SK-4S are positioned in locations near or downgradient of areas believed to be potential source areas for historical groundwater impacts. SK-4 will also act as a downgradient well.

Although the alluvial ground water table aquifer is believed to act regionally as one hydraulic unit (or flow zone), the variable distribution of dissolved constituents throughout the unit support the need for well clusters. However, because the saturated portion of the flow zone above the clay lens is generally only 8 or 9 feet thick, and there are no indications of significant hydrogeologic heterogeneities across

the site, one well screen should sufficiently monitor the upper and mid-portion of the unit. Screening across the depths of the capillary fringe and the mid-depth portion of the flow zone, the samples collected should serve to average the extremely localized affects of infiltration and volatilization in a manner consistent with the site-scale characterization of contaminant magnitude and extent. Therefore, the shallow well screens will be a minimum of 10 feet in length. They will be screened in such a manner as to intersect the groundwater surface and extending approximately 2 to 3 feet above it. This may require 12 to 15 foot screen lengths in some locations to allow for potential seasonal variations in the ground water table. The base of the screen will be placed atop the clay unit that is encountered at approximately 1292 feet above mean sea level (msl). The purpose of the shallow wells will be to monitor the 8 to 10 feet of saturated thickness above the clay layer. The deep well of each pair will be installed with 5 foot slotted screens, placed atop the Wellington Shale bedrock, to monitor the groundwater quality at the base of the unconsolidated alluvial flow zone. The wells will be constructed of 2-inch diameter, Schedule 40, polyvinyl chloride (PVC) threaded piping, with 0.01-inch slotted screens.

At least two of the deep monitoring wells will be continuously sampled to confirm the lithologic interpretations presented from the electrical conductivity logs. At this time, we anticipate that SK-1D and SK-3D will be selected for continuous sampling.

The monitoring well construction, well development, ground water sampling and analysis will otherwise follow the description in the Phase I Work Plan, including the standard operating procedures (SOP) outlined in Appendix G.

The four wells proposed for abandonment are presented on Figure 7, and include UPRR-1, UPRR-2, HRI-02 and RSC-1. The two UPRR wells were observed to be damaged beyond repair during the last field effort, and the other two wells were fully penetrating well screens that permeate the clay layer that occurs at approximately 1292 feet msl. Although HRI-01 reportedly has a fully penetrating well screen, there is no clay layer dividing the sand unit in that area of the site, we recommend leaving HRI-01 in place at this time. During the well abandonment, the remaining well materials will be pulled, the holes will be overdrilled and grouted to the ground surface in accordance with standard engineering practices and all applicable guidelines.

# TABLES

**Table 1**
**Groundwater Analytical Results**
**RFI Investigation November/December 1999**
**S-K (Wichita) Facility**
**Wichita, Kansas**

| | | | Sampling Point Identification | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EB-1 | | | EB-2 | | | EB-3 | | | EB-4 | | |
| | | | 13'† | 22.5' | 35'† | 16'† | 23' | 32.5' | 16' | 23' | 35' | 15' | 24.5' | 36' |
| Parameters | Units | Detection Limit | | | | | | | | | | | | |
| VOCs | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/L | 5 | 140 | -- | -- | 47 | 13 | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethane | ug/L | 5 | 61 | -- | -- | -- | 11 | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethene | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,2,4-Trimethylbenzene | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,3,5-Trimethylbenzene | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzene | ug/L | 5 | -- | -- | -- | 14 | 10 | -- | -- | -- | -- | -- | -- | -- |
| Carbon tetrachloride | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | 56 | -- | -- | -- | -- |
| Chloroform | ug/L | 5 | -- | -- | | -- | -- | 5.7 | -- | 73 | | -- | -- | |
| cis-1,2-Dichlorethene | ug/L | 2.5 | 610 | 28 | 56 | 370 | 95 | 26 | -- | 9.3 | -- | -- | -- | 62 |
| Ethylbenzene | ug/L | 25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Isopropylbenzene | ug/L | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| m-Xylene & p-Xylene | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| n-Butylbenzene | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| n-Propylbenzene | ug/L | 12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| o-Xylene | ug/L | 2.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Tetrachloroethene | ug/L | 5 | 500 | 11 | -- | 25 | 27 | -- | -- | -- | | -- | -- | -- |
| Toluene | ug/L | 25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| trans-1,2-Dichloroethene | ug/L | 2.5 | 14 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Trichloroethene | ug/L | 5 | 420 | 9.2 | 350 | 14 | 42 | 160 | -- | 71 | -- | -- | -- | 430***/360** |
| Vinyl Chloride | ug/L | 10 | -- | -- | -- | 28 | 28 | -- | -- | -- | -- | -- | -- | -- |
| Napthalene | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

† Elevated detection limits due to dilution of sample. See raw analytical results for sample-specific detection limits

* - Data Qualifier B = Analyte also found in blank.

** - Data Qualifier D = Sample was diluted due to concentration levels.

*** - Data Qualifier E = Concentration of compound exceeded the calibration range for the instrument.

@ - Data Qualifier @ = Biased high due to a coeluting isomer.

-- Not detected

**Table 1**
**Groundwater Analytical Results**
**RFI Investigation November/December 1999**
**S-K (Wichita) Facility**
**Wichita, Kansas**

| | | | Sampling Point Identification | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | EB-5 | | | B-4 | | | | B-21 | | | | B-31 |
| | | | 17.5' | 24' | 39' | 14'† | 14' Dup† | 22' | 32' | 13'† | 22' | 32.5'† | 32.5' Dup | 6'† |
| Parameters | Units | Detection Limit | | | | | | | | | | | | |
| VOCs | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/L | 5 | -- | 13 | -- | -- | -- | -- | -- | 2,700***/2,700** | 49 | -- | -- | -- |
| 1,1-Dicholorethane | ug/L | 5 | 35 | -- | -- | -- | -- | -- | -- | 180 | 13 | -- | -- | -- |
| 1,1-Dicholorethene | ug/L | 5 | 19 | 20 | -- | -- | -- | -- | -- | 170 | 9.6 | -- | -- | -- |
| 1,2,4-Trimethylbenzene | ug/L | 5 | -- | -- | -- | 540***/440** | 490***/380** | 29 | 17 | -- | -- | -- | -- | -- |
| 1,3,5-Trimethylbenzene | ug/L | 5 | -- | -- | -- | 110 | 110 | 5.7 | -- | -- | -- | -- | -- | -- |
| Benzene | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Carbon tetrachloride | ug/L | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chloroform | ug/L | 5 | -- | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| cis-1,2-Dichlorethene | ug/L | 2.5 | 2,400***/1,900** | 4.8 | -- | 26 | 24 | 7.6 | 18 | 8,300***/11,000** | 240***/210** | 54 | 61 | 570 |
| Ethylbenzene | ug/L | 25 | -- | -- | -- | 100 | 92 | 6.7 | -- | 880***/1,400** | 19 | -- | -- | -- |
| Isopropylbenzene | ug/L | 10 | -- | -- | -- | 13 | 11 | -- | -- | 12 | -- | -- | -- | -- |
| m-Xylene & p-Xylene | ug/L | 5 | -- | -- | -- | 350 | 310 | 20 | 11 | 3,300***/5,800** | 26 | -- | -- | -- |
| n-Butylbenzene | ug/L | 5 | -- | -- | -- | 27@ | 24@ | -- | -- | -- | -- | -- | -- | -- |
| n-Propylbenzene | ug/L | 12 | -- | -- | -- | 60 | 58 | -- | -- | 18 | -- | -- | -- | -- |
| o-Xylene | ug/L | 2.5 | -- | -- | -- | 130 | 110 | 7 | 4 | 8.6 | -- | -- | -- | -- |
| Tetrachloroethene | ug/L | 5 | 1,600***/1,100** | 5.3 | | -- | 11 | -- | -- | 1,400***/1,800 | 160 | 21 | 25 | 380 |
| Toluene | ug/L | 25 | -- | -- | -- | 69 | 63 | -- | -- | 39 | -- | -- | -- | 130 |
| trans-1,2-Dichloroethene | ug/L | 2.5 | 15 | -- | -- | -- | -- | -- | -- | 27 | 3.1 | -- | -- | -- |
| Trichloroethene | ug/L | 5 | 2,200***/1,700** | 5.5 | -- | 39 | 39 | 56 | 120 | 210 | -- | 300 | 400***/350** | 130 |
| Vinyl Chloride | ug/L | 10 | 130 | -- | -- | -- | -- | -- | -- | 30 | -- | -- | -- | 68 |
| Napthalene | ug/L | 5 | -- | -- | -- | 130 | 100 | 6.9 | -- | -- | -- | -- | -- | -- |

† Elevated detection limits due to dilution of sample. See raw analytical results for sample-specific detection limits

* - Data Qualifier B = Analyte also found in blank.

** - Data Qualifier D = Sample was diluted due to concentration levels.

*** - Data Qualifier E = Concentration of compound exceeded the calibration range for the instrument.

@ - Data Qualifier @ = Biased high due to a coeluting isomer.

-- Not detected

Table 2
Soil Analytical Results
RFI Investigation
S-K (Wichita) Facility
November/December 1999

| | | | | Soil Boring Identification | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | B-1 | | B-2 | B-3 | | B-4 | | | B-5 | B-6 | B-7 | B-8 | B-9 | B-10 | B-11 | B-12 |
| | | | | 4" | 16' | 4" | 3' | 16' | 4" | 16'† | 16' Dup† | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 3' |
| **Parameters** | | Detection Limit | Test Method | | | | | | | | | | | | | | | | |
| Percent Moisture | % | 0.5 | D 2216-90 | 22.1 | 3.5 | 18.7 | 21 | 18.2 | 15.5 | 8.4 | 7.2 | 20.1 | 17.6 | 20.6 | 24 | 16.5 | 18.2 | 29.6 | 20.9 |
| Corrosivity | No Units | 1 | 9040B | 7.2 | -- | 6.8 | 6.8 | -- | 6.8 | 7.6 | 7.6 | 6.6 | 5.9 | 6.2 | 6.3 | 6.5 | 6.4 | 6.1 | 6.8 |
| **RCRA Metals** | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 30 | 6010B | -- | NA | -- | -- | NA | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | mg/kg | 20 | 6010B | 221 | NA | 198 | 207 | NA | 171 | -- | -- | 20 | 155 | 158 | 238 | 192 | 223 | 189 | 234 |
| Cadmium | mg/kg | 0.5 | 6010B | -- | NA | -- | -- | NA | 0.63 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | mg/kg | 1 | 6010B | 25.7 | NA | 19.8 | 20.2 | NA | 24.9 | 2.3 | 2.4 | 21.2 | 21.7 | 22.8 | 24.9 | 22.4 | 19.6 | 20.7 | 25.1 |
| Lead | mg/kg | 10 | 6010B | 17.1 | NA | 15.7 | 12.3 | NA | 101 | -- | -- | 15.1 | 13.9 | 10 | 31 | 25.1 | 13.7 | 66.9 | 12.8 |
| Mercury | mg/kg | 0.1 | 7471A | -- | NA | -- | -- | NA | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Selenium | mg/kg | 25 | 6010B | -- | NA | -- | -- | NA | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Silver | mg/kg | 1 | 6010B | -- | NA | -- | -- | NA | -- | -- | -- | -- | -- | -- | 1 | -- | -- | -- | -- |
| **Organic Constituents** | | | | | | | | | | | | | | | | | | | |
| **VOCs** | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,2,4-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | 48,000***/55,000** | 14,000 | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,2-Dichlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,3,5-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | 15,000 | 3,600 | -- | -- | -- | -- | -- | -- | -- | -- |
| Chlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| cis-1,2-Dichlorethene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | 43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | ug/kg | 25 | 8260B | -- | -- | -- | -- | -- | -- | 3,100 | 800 | -- | -- | -- | -- | -- | -- | -- | -- |
| Isopropylbenzene | ug/kg | 1000 | 8260B | -- | -- | -- | -- | -- | -- | 1,000 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methylene chloride | ug/kg | 5 | 8260B | -- | -- | -- | -- | 5.4 | 5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| m-Xylene & p-Xylene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | 16,000 | 3,900 | -- | -- | -- | -- | -- | -- | -- | -- |
| n-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | 4600@ | 1200'@ | -- | -- | -- | -- | -- | -- | -- | -- |
| n-Propylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | 5,900 | 1,400 | -- | -- | -- | -- | -- | -- | -- | -- |
| o-Xylene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | -- | 6,600 | 1,500 | -- | -- | -- | -- | -- | -- | -- | -- |
| p-Isopropyltoluene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| sec-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Tetrachloroethene | ug/kg | 5 | 8260B | -- | -- | 6.2 | -- | 8.1 | -- | -- | -- | -- | 12 | -- | 51 | 11 | 31 | 72 | -- |
| Toluene | ug/kg | 25 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| trans-1,2-Dichloroethene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | 4.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Trichloroethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Vinyl Chloride | ug/kg | 10 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Napthalene | ug/kg | 5 | 8260B | -- | NA | NA | NA | NA | NA | 12,000 | 4,800 | -- | -- | -- | -- | -- | -- | -- | -- |
| **SVOCs** | | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl) phthalate | ug/kg | 330 | 8270C | -- | NA | NA | NA | NA | NA | NA | NA | -- | 1,000 | -- | -- | -- | -- | -- | NA |
| Dimethyl phthalate | ug/kg | 3300 | 8270C | -- | NA | NA | NA | NA | NA | NA | NA | -- | -- | -- | -- | -- | -- | -- | NA |
| **Pesticides** | | | | | | | | | | | | | | | | | | | |
| 4,4'-DDE | ug/kg | 17 | 8081A | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- |
| **TPH-diesel** | | | | | | | | | | | | | | | | | | | |
| Diesel Range Organics | ug/kg | 1700 | 8015B | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

TPH - Total Petroleum Hydrocarbons

-- Not detected

NA = Not Analyzed

† Elevated detection limits due to dilution of sample. See raw analytical results for sample-specific detection limits

* - Data Qualifier B = Analyte also found in blank.

** - Data Qualifier D = Sample was diluted due to concentration levels.

*** - Data Qualifier E = Concentration of compound exceeded the calibration range for the instrument.

**** - Data Qualifier D & E = See above

@ = Biased high due to a coeluting isomer.

# = Values listed for DDE, not 4,4 - DDE

Table 2
Soil Analytical Results
RFI Investigation
S-K (Wichita) Facility
November/December 1999

| Parameters | | Detection Limit | Test Method | Soil Boring Identification | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | B-13 | | B-14 | B-15 | B-16 | B-17 | B-18 | | B-19 | | B-20 | | | B-21 | | B-22 | | |
| | | | | 3'† | 12' | 4" | 3' | 3' | 3'† | 3' | 3' Dup | 3'† | 13' | 3' | 3' Dup† | 16' | 3'† | 12'† | 3' | 3' Dup | 16' |
| Percent Moisture | % | 0.5 | D 2216-90 | 18.8 | 13.5 | 14.3 | 18.9 | 24 | 21 | 18.9 | 15.9 | 8.4 | 20.4 | 20.4 | 21.2 | -- | 9.5 | 17.6 | 19.8 | 21.1 | 21.9 |
| Corrosivity | No Units | 1 | 9040B | 5.5 | -- | 6.3 | 6.1 | 6.2 | 6.1 | 5.8 | 6.6 | 7.6 | -- | 6.6 | 6.4 | -- | 7.7 | -- | 7.4 | 7.1 | -- |
| **RCRA Metals** | | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 30 | 6010B | -- | NA | -- | -- | -- | -- | -- | -- | -- | NA | -- | -- | -- | -- | NA | -- | -- | NA |
| Barium | mg/kg | 20 | 6010B | 181 | NA | 143 | 115 | 166 | 95 | 181 | 166 | 219 | NA | 148 | 152 | NA | 154 | NA | 184 | 157 | NA |
| Cadmium | mg/kg | 0.5 | 6010B | -- | NA | -- | -- | -- | -- | -- | -- | -- | NA | -- | -- | NA | -- | NA | -- | -- | NA |
| Chromium | mg/kg | 1 | 6010B | 19 | NA | 23.3 | 20.4 | 20.1 | 20.3 | 21 | 18.8 | 20.8 | NA | 18.7 | 18.9 | NA | 15.1 | NA | 21.8 | 20.1 | NA |
| Lead | mg/kg | 10 | 6010B | 15.5 | NA | 11.6 | 11.5 | 1,560 | 146 | 12.1 | 10.5 | 68.4 | NA | 13.6 | 10.7 | NA | 12.9 | NA | 10.2 | 26.2 | NA |
| Mercury | mg/kg | 0.1 | 7471A | -- | NA | -- | -- | -- | -- | -- | -- | -- | NA | -- | -- | NA | -- | NA | -- | -- | NA |
| Selenium | mg/kg | 25 | 6010B | -- | NA | -- | -- | -- | -- | -- | -- | -- | NA | -- | -- | NA | -- | NA | -- | -- | NA |
| Silver | mg/kg | 1 | 6010B | -- | NA | -- | -- | -- | 2.4 | -- | -- | -- | NA | -- | -- | NA | -- | NA | -- | -- | NA |
| **Organic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| **VOCs** | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | 67 | -- | -- | 31 | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,2,4-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,2-Dichlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,3,5-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 10 | 120 | -- | -- | 28 | 26 | 18 | 21 |
| cis-1,2-Dichlorethene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | ug/kg | 25 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Isopropylbenzene | ug/kg | 1000 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methylene chloride | ug/kg | 5 | 8260B | 28* | -- | 5* | -- | -- | -- | -- | 5.2* | -- | 5.1* | -- | -- | -- | -- | 26* | 5.5 | -- | -- |
| m-Xylene & p-Xylene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| n-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| n-Propylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| o-Xylene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| p-Isopropyltoluene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| sec-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Tetrachloroethene | ug/kg | 5 | 8260B | 800 | 35 | -- | -- | -- | -- | -- | -- | -- | 24 | 24 | 480 | -- | 6,800 | 490 | 95 | 48 | 40 |
| Toluene | ug/kg | 25 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| trans-1,2-Dichloroethene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Trichloroethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | 52 | -- | -- | -- | -- | -- | 5.7 | 120 | -- | -- | 85 | 72 | 44 | 19 |
| Vinyl Chloride | ug/kg | 10 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | 34 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Napthalene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **SVOCs** | | | | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl) phthalate | ug/kg | 330 | 8270C | NA | NA | NA | NA | NA | -- | -- | 1000 | 9400 | NA | -- | -- | NA | 24,000 | NA | NA | NA | NA |
| Dimethyl phthalate | ug/kg | 3300 | 8270C | NA | NA | NA | NA | NA | -- | -- | -- | 8400 | NA | -- | -- | NA | -- | NA | NA | NA | NA |
| **Pesticides** | | | | | | | | | | | | | | | | | | | | | |
| 4,4'-DDE | ug/kg | 17 | 8081A | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- | NA | NA | NA | NA | NA | NA |
| **TPH-diesel** | | | | | | | | | | | | | | | | | | | | | |
| Diesel Range Organics | ug/kg | 1700 | 8015B | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- | NA | NA | NA | NA | NA | NA |

TPH - Total Petroleum Hydrocarbons

-- Not detected

NA = Not Analyzed

† Elevated detection limits due to dilution of sample. See raw analytical res

* - Data Qualifier B = Analyte also found in blank.

** - Data Qualifier D = Sample was diluted due to concentration levels.

*** - Data Qualifier E = Concentration of compound exceeded the calibratio

**** - Data Qualifier D & E = See above

@ = Biased high due to a coeluting isomer.

# = Values listed for DDE, not 4,4 - DDE

Table 2
Soil Analytical Results
RFI Investigation
S-K (Wichita) Facility
November/December 1999

| | | | | Soil Boring Identification | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | B-23 | | | B-24 | | B-25 | | B-26 | B-27 | | B-28 | B-29 | | B-30 | | B-31 | B-32 |
| | | | | 3' | 8' | 8' Dup | 0-3"† | 6' | 11' | 15' | 10' | 3' | 15' | 4" | 4" | 13' | 4" | 16' | 5' | 0-3" |
| **Parameters** | | Detection Limit | Test Method | | | | | | | | | | | | | | | | | |
| Percent Moisture | % | 0.5 | D 2216-90 | 21.9 | 17 | 22.3 | 10.8 | 14.5 | 19.1 | 12.6 | 18.5 | 18.3 | 7.2 | 26.7 | 5.6 | 10.4 | 5.5 | 16 | 18.6 | 22.3 |
| Corrosivity | No Units | 1 | 9040B | 6.7 | -- | -- | 7.4 | 7.7 | 7.3 | -- | 7.6 | 6.4 | -- | 7.1 | 8.5 | -- | 7.4 | -- | 7.3 | 7 |
| **RCRA Metals** | | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 30 | 6010B | -- | NA | NA | 49.2 | -- | -- | NA | -- | -- | NA | -- | -- | NA | -- | -- | -- | -- |
| Barium | mg/kg | 20 | 6010B | 202 | NA | NA | 44.1 | 150 | 63.9 | NA | 103 | 314 | NA | 232 | 134 | NA | 110 | NA | 305 | 189 |
| Cadmium | mg/kg | 0.5 | 6010B | -- | NA | NA | 46.8 | -- | -- | NA | -- | -- | NA | -- | -- | NA | 37.3 | NA | -- | -- |
| Chromium | mg/kg | 1 | 6010B | 21.3 | NA | NA | 33.7 | 15 | 8.1 | NA | 11.7 | 22.8 | NA | 25.9 | 14.5 | NA | 39.7 | NA | 17.4 | 21.1 |
| Lead | mg/kg | 10 | 6010B | 46.6 | NA | NA | 392 | -- | -- | NA | -- | 12.6 | NA | 13.8 | 10.1 | NA | 319 | NA | 20.9 | 15 |
| Mercury | mg/kg | 0.1 | 7471A | -- | NA | NA | 0.27 | -- | -- | NA | -- | -- | NA | -- | 0.77 | NA | 0.11 | NA | -- | -- |
| Selenium | mg/kg | 25 | 6010B | -- | NA | NA | -- | -- | -- | NA | -- | -- | NA | -- | -- | NA | -- | NA | -- | -- |
| Silver | mg/kg | 1 | 6010B | -- | NA | NA | -- | -- | -- | NA | -- | 1.4 | NA | -- | -- | NA | -- | NA | 1.1 | 1 |
| **Organic Constituents** | | | | | | | | | | | | | | | | | | | | |
| **VOCs** | | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,2,4-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 93 | -- |
| 1,2-Dichlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 21 | -- |
| 1,3,5-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 35 | -- |
| Chlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| cis-1,2-Dichlorethene | ug/kg | 2.5 | 8260B | 78 | -- | 7.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 11 | 18 | -- | 4.6 |
| Ethylbenzene | ug/kg | 25 | 8260B | -- | -- | -- | 440 | -- | -- | 6.5 | -- | -- | -- | -- | -- | -- | -- | -- | 8.5 | -- |
| Isopropylbenzene | ug/kg | 1000 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methylene chloride | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5 | -- | -- |
| m-Xylene & p-Xylene | ug/kg | 5 | 8260B | -- | -- | -- | 700 | 23 | -- | 32 | -- | -- | 14 | -- | -- | -- | -- | -- | 50 | -- |
| n-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 25❶ | -- |
| n-Propylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7 | -- |
| o-Xylene | ug/kg | 2.5 | 8260B | -- | -- | -- | 560 | 7.3 | -- | 12 | -- | -- | 8.3 | -- | -- | -- | -- | -- | 24 | -- |
| p-Isopropyltoluene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.6 | -- |
| sec-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5 | -- |
| Tetrachloroethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | 35 | 7.6 | -- | -- | -- | 38 | 27 | 110 | 16 |
| Toluene | ug/kg | 25 | 8260B | -- | -- | -- | 56 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| trans-1,2-Dichloroethene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Trichloroethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 28 | -- | 6.6 |
| Vinyl Chloride | ug/kg | 10 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Napthalene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 37 | -- |
| **SVOCs** | | | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl) phthalate | ug/kg | 330 | 8270C | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- |
| Dimethyl phthalate | ug/kg | 3300 | 8270C | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- |
| **Pesticides** | | | | | | | | | | | | | | | | | | | | |
| 4,4'-DDE | ug/kg | 17 | 8081A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 17 | NA | NA | -- |
| **TPH-diesel** | | | | | | | | | | | | | | | | | | | | |
| Diesel Range Organics | ug/kg | 1700 | 8015B | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- |

TPH - Total Petroleum Hydrocarbons

-- Not detected

NA = Not Analyzed

† Elevated detection limits due to dilution of sample. See raw analytical res

* - Data Qualifier B = Analyte also found in blank.

** - Data Qualifier D = Sample was diluted due to concentration levels.

*** - Data Qualifier E = Concentration of compound exceeded the calibratio

**** - Data Qualifier D & E = See above

❶ = Biased high due to a coeluting isomer.

# = Values listed for DDE, not 4,4 - DDE

Table 2
Soil Analytical Results
RFI Investigation
S-K (Wichita) Facility
November/December 1999

| | | | | Soil Boring Identification | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | B-33 | | B-34 | B-35 | | B-36 | B-37 | B-38 | B-39 | B-40 | | B-41 | B-42 | B-43 | B-44 | |
| | | | | 0-3' | 15' | 0-3' | 6'† | 13' | 3' | 3' | 3' | 4" | 4"† | 16' | 4" | 4" | 4" | 11' | 15' |
| **Parameters** | | Detection Limit | Test Method | | | | | | | | | | | | | | | | |
| Percent Moisture | % | 0.5 | D 2216-90 | 20.7 | 8.4 | 22.8 | 13.2 | 20.3 | 24.2 | 21.7 | 23.2 | 11.1 | 14.6 | 7.8 | 13.9 | 18.4 | 23.4 | 11.9 | 3.4 |
| Corrosivity | No Units | 1 | 9040B | 6.8 | -- | 6.7 | 7.1 | -- | 7.4 | 6.5 | 7.8 | 7.8 | 7.2 | -- | 6.9 | 7.4 | 6.4 | 6.9 | -- |
| **RCRA Metals** | | | | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 30 | 6010B | -- | NA | -- | -- | NA | -- | -- | -- | -- | -- | NA | -- | -- | -- | -- | NA |
| Barium | mg/kg | 20 | 6010B | 319 | NA | 191 | 67.9 | NA | 163 | 172 | 98.4 | 86.5 | 344 | NA | 369 | 185 | 202 | 38.4 | NA |
| Cadmium | mg/kg | 0.5 | 6010B | -- | NA | -- | -- | NA | -- | -- | -- | 0.69 | 3.3 | NA | 1.6 | -- | -- | -- | NA |
| Chromium | mg/kg | 1 | 6010B | 21.4 | NA | 21.6 | 11.8 | NA | 18.7 | 22.8 | 10.3 | 17 | 91.7 | NA | 60.4 | 19.7 | 24.5 | 12 | NA |
| Lead | mg/kg | 10 | 6010B | 20.3 | NA | 12.2 | 296 | NA | -- | 15.6 | 25.8 | 19.8 | 7800 | NA | 320 | 16.6 | 15 | -- | NA |
| Mercury | mg/kg | 0.1 | 7471A | -- | NA | -- | -- | NA | -- | -- | -- | -- | 0.23 | NA | 0.16 | -- | -- | 0.4 | NA |
| Selenium | mg/kg | 25 | 6010B | -- | NA | -- | -- | NA | -- | -- | -- | -- | -- | NA | -- | -- | -- | -- | NA |
| Silver | mg/kg | 1 | 6010B | 1.1 | NA | -- | -- | NA | -- | -- | -- | -- | 3 | NA | 1.4 | -- | 1 | -- | NA |
| **Organic Constituents** | | | | | | | | | | | | | | | | | | | |
| **VOCs** | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 18 | -- | -- | -- |
| 1,1-Dicholorethane | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | 5 | -- | -- | -- | -- | -- | -- | -- |
| 1,1-Dicholorethene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | 5 | -- | -- | -- | -- | -- | -- | -- |
| 1,2,4-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5.9 | -- | -- | -- |
| 1,2-Dichlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,3,5-Trimethylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 25 | -- | -- | -- |
| Chlorobenzene | ug/kg | 5 | 8260B | -- | -- | -- | 220***/1,100****/1,200** | 5.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| cis-1,2-Dichlorethene | ug/kg | 2.5 | 8260B | 3 | -- | 3 | -- | -- | 3 | 12 | -- | 8.4 | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | ug/kg | 25 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.7 | -- | -- | -- |
| Isopropylbenzene | ug/kg | 1000 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methylene chloride | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5.7* | -- | -- | -- | -- | -- | -- |
| m-Xylene & p-Xylene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 18 | -- | -- | -- |
| n-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| n-Propylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| o-Xylene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 80 | -- | -- | -- |
| p-Isopropyltoluene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| sec-Butylbenzene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Tetrachloroethene | ug/kg | 5 | 8260B | 110 | -- | 9.4 | -- | -- | -- | -- | -- | -- | 9.7 | 9.2 | 25 | 13 | -- | -- | -- |
| Toluene | ug/kg | 25 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.6 | -- | -- | -- |
| trans-1,2-Dichloroethene | ug/kg | 2.5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Trichloroethene | ug/kg | 5 | 8260B | 29 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Vinyl Chloride | ug/kg | 10 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Napthalene | ug/kg | 5 | 8260B | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **SVOCs** | | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl) phthalate | ug/kg | 330 | 8270C | NA | NA | NA | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- | NA | NA |
| Dimethyl phthalate | ug/kg | 3300 | 8270C | NA | NA | NA | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | -- | NA | NA |
| **Pesticides** | | | | | | | | | | | | | | | | | | | |
| 4,4'-DDE | ug/kg | 17 | 8081A | -- | NA | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **TPH-diesel** | | | | | | | | | | | | | | | | | | | |
| Diesel Range Organics | ug/kg | 1700 | 8015B | NA | NA | NA | NA | NA | 2100 | -- | -- | NA | NA | NA | NA | NA | NA | NA | NA |

TPH - Total Petroleum Hydrocarbons

-- Not detected

NA = Not Analyzed

† Elevated detection limits due to dilution of sample. See raw analytical res

* - Data Qualifier B = Analyte also found in blank.

** - Data Qualifier D = Sample was diluted due to concentration levels.

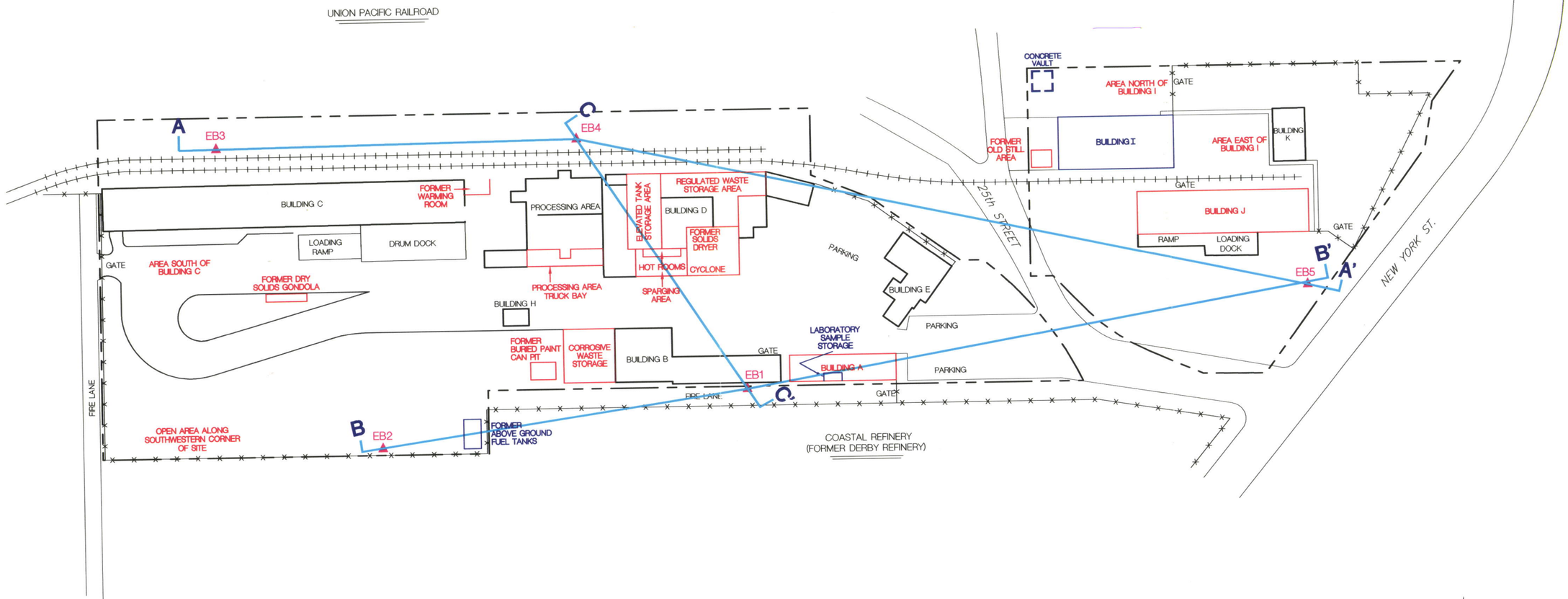
*** - Data Qualifier E = Concentration of compound exceeded the calibratio

**** - Data Qualifier D & E = See above

@ = Biased high due to a coeluting isomer.

# = Values listed for DDE, not 4,4 - DDE

# FIGURES




## LEGEND

- : SWMU Locations
- : AOC Locations
- LINE OF SECTION
- ▲ ELECTRICAL CONDUCTIVITY PROBE

North

0 100

FEET

NOTE: SURVEYED TO STATE PLANE COORDINATE SYSTEM

| | BY | DATE |
|---|---|---|
| DRAWN | CJJ | 3-07-00 |
| CHECKED | | |
| APPROVED | | |
| APPROVED | | |
| APPROVED | | |

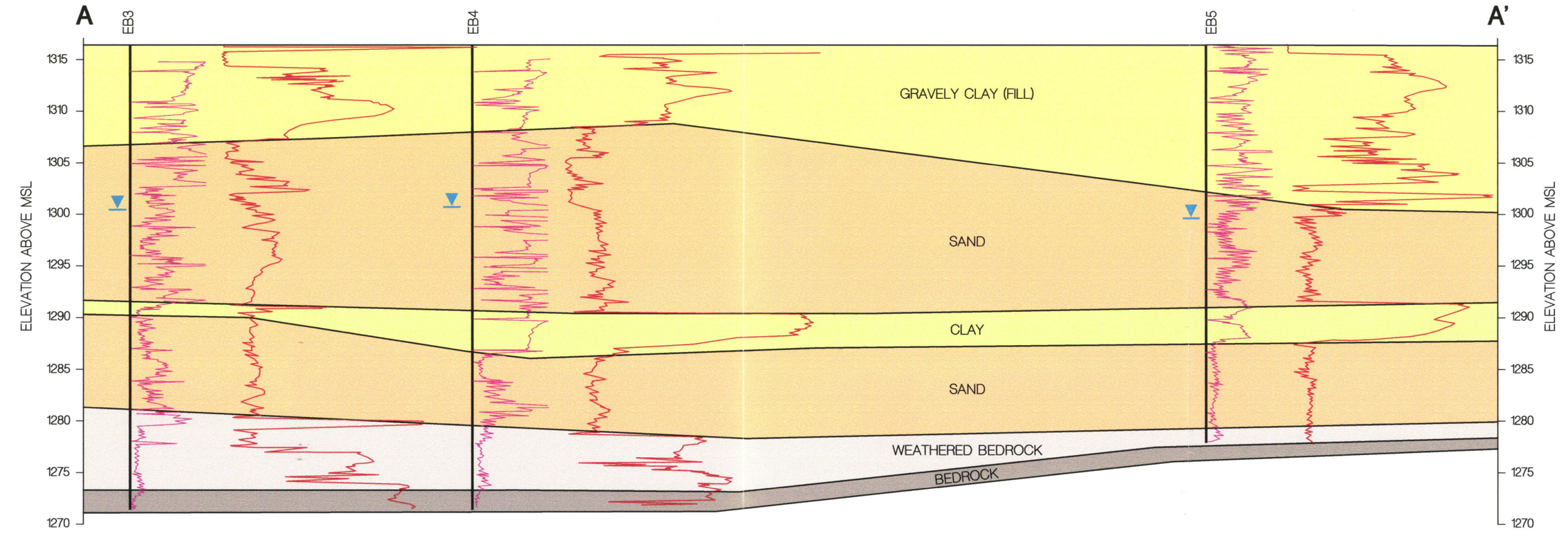
safety-kleen consulting

# SAFETY-KLEEN - (WICHITA) FACILITY

## FIGURE 1
## CROSS-SECTION INDEX MAP

SCALE: 1" = 100'

DWG. NO: 963231-0017




VERTICAL SCALE: 1" = 10'

0 40
FEET
HORIZONTAL SCALE: 1" = 40'

## LEGEND

- RELATIVE ELECTRICAL CONDUCTIVITY
- RELATIVE HAMMER SPEED
- ESTIMATED GROUNDWATER ELEVATION FROM POTENTIOMETRIC SURFACE MAP (DEC. 1999)

NOTE: The lithologic cross-section presented above has been generated based on available site information and interpretations of electrical conductivity logs collected on site. It represents an interpolation of general subsurface conditions based on given data points.

| | BY | DATE |
|---|---|---|
| DRAWN | WRB | 3-14-00 |
| CHECKED | | |
| APPROVED | | |
| APPROVED | | |
| APPROVED | | |
| PLOT SETUP AT: 11 x 17 AT 100 SCALE | | |

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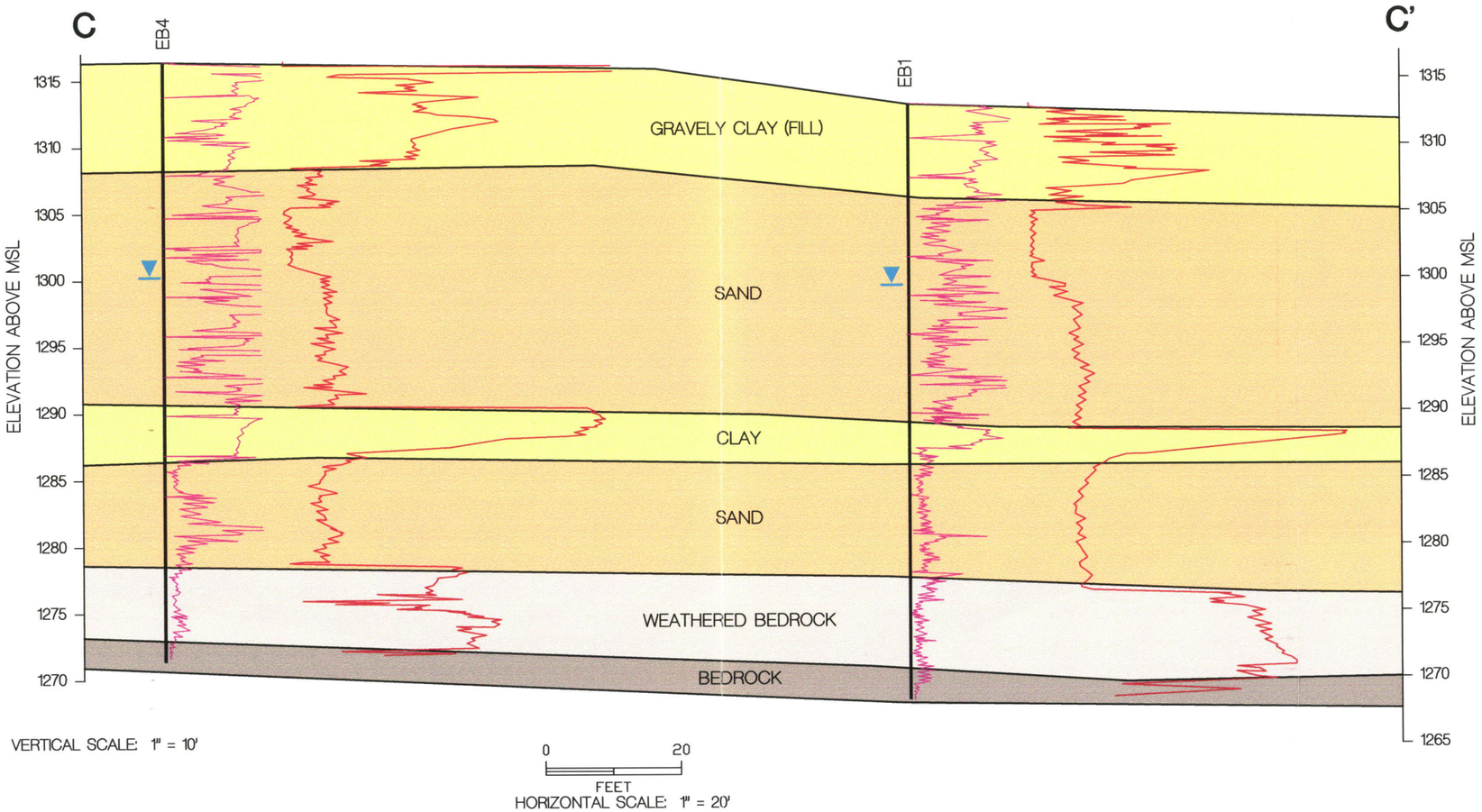
**SAFETY-KLEEN - WICHITA, KANSAS**

**FIGURE 2**
**GENERALIZED CROSS-SECTION A - A'**

SCALE: AS NOTED

DWG. NO: 963231-0014




**LEGEND**

- RELATIVE ELECTRICAL CONDUCTIVITY
- RELATIVE HAMMER SPEED
- ESTIMATED GROUNDWATER ELEVATION

NOTE: The lithologic cross-section presented above has been generated based on available site information and interpretations of electrical conductivity logs collected on site. It represents an interpolation of general subsurface conditions based on given data points.

| | BY | DATE |
|---|---|---|
| DRAWN | WRB | 3-07-00 |
| CHECKED | | |
| APPROVED | | |
| APPROVED | | |
| APPROVED | | |
| PLOT SETUP AT: 11 x 17 AT 100 SCALE | | |

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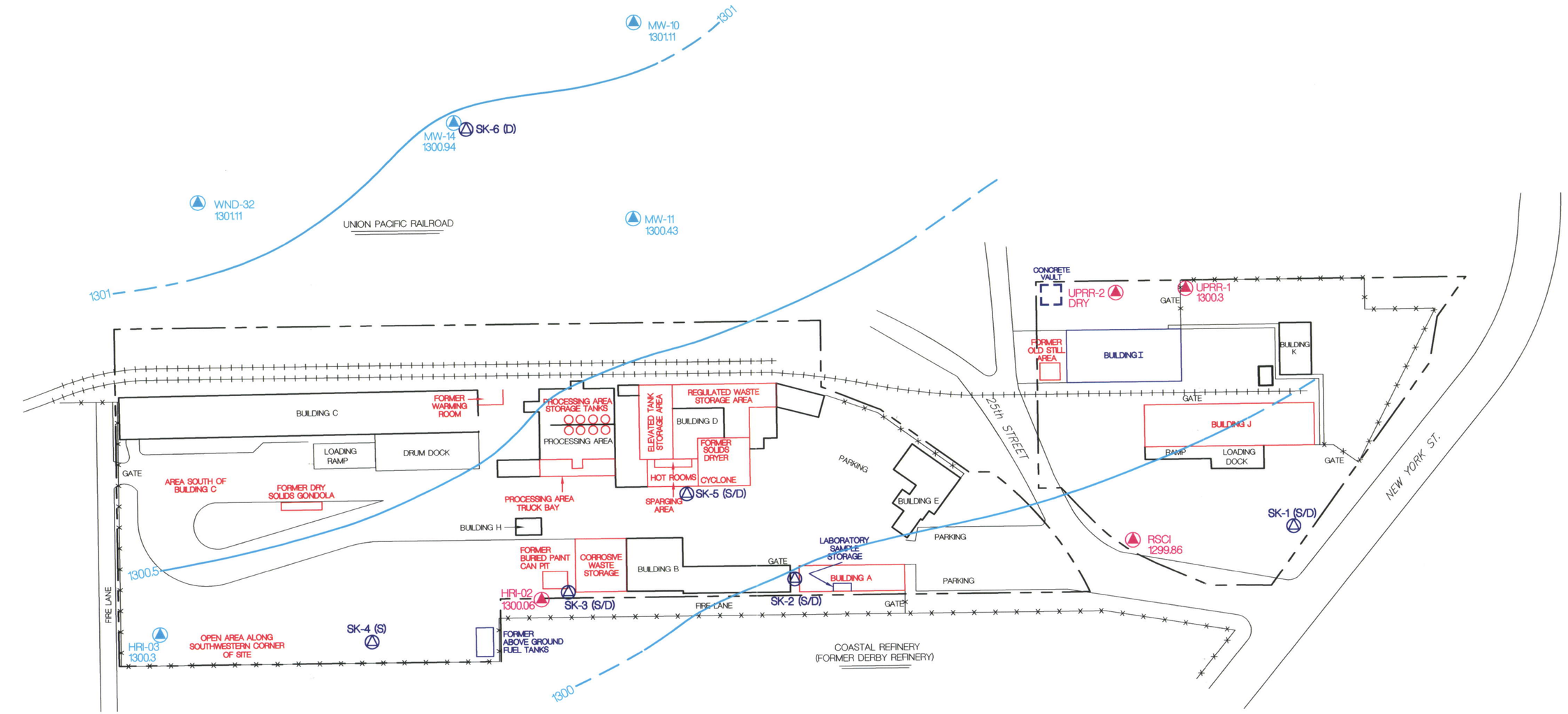
**SAFETY-KLEEN - WICHITA, KANSAS**

**FIGURE 4**
**GENERALIZED CROSS-SECTION C - C'**

SCALE: AS NOTED

DWG. NO: 963231-0015




## LEGEND

- : SWMU Locations
- : AOC Locations
- EXISTING MONITORING WELL LOCATION
- WELL TO BE ABANDONED
- SK-5 (S/D) PROPOSED MONITORING WELL CLUSTER
  - (S) INDICATES A SHALLOW WELL MONITORING UPPER 10' OF GROUNDWATER TABLE
  - (D) INDICATES A DEEPER WELL MONITORING THE LOWER 5' OF THE ALLUVIAL WATER-BEARING ZONE
- POTENTIOMETRIC SURFACE CONTOUR

North

0 — 100 FEET

NOTES: SURVEYED TO STATE PLANE COORDINATE SYSTEM

INTERPOLATION OF GROUNDWATER ELEVATION CONTOURS BASED ON GIVEN DATA POINTS

| | BY | DATE |
|---|---|---|
| DRAWN | CJJ | 3-14-00 |
| CHECKED | | |
| APPROVED | | |
| APPROVED | | |
| APPROVED | | |

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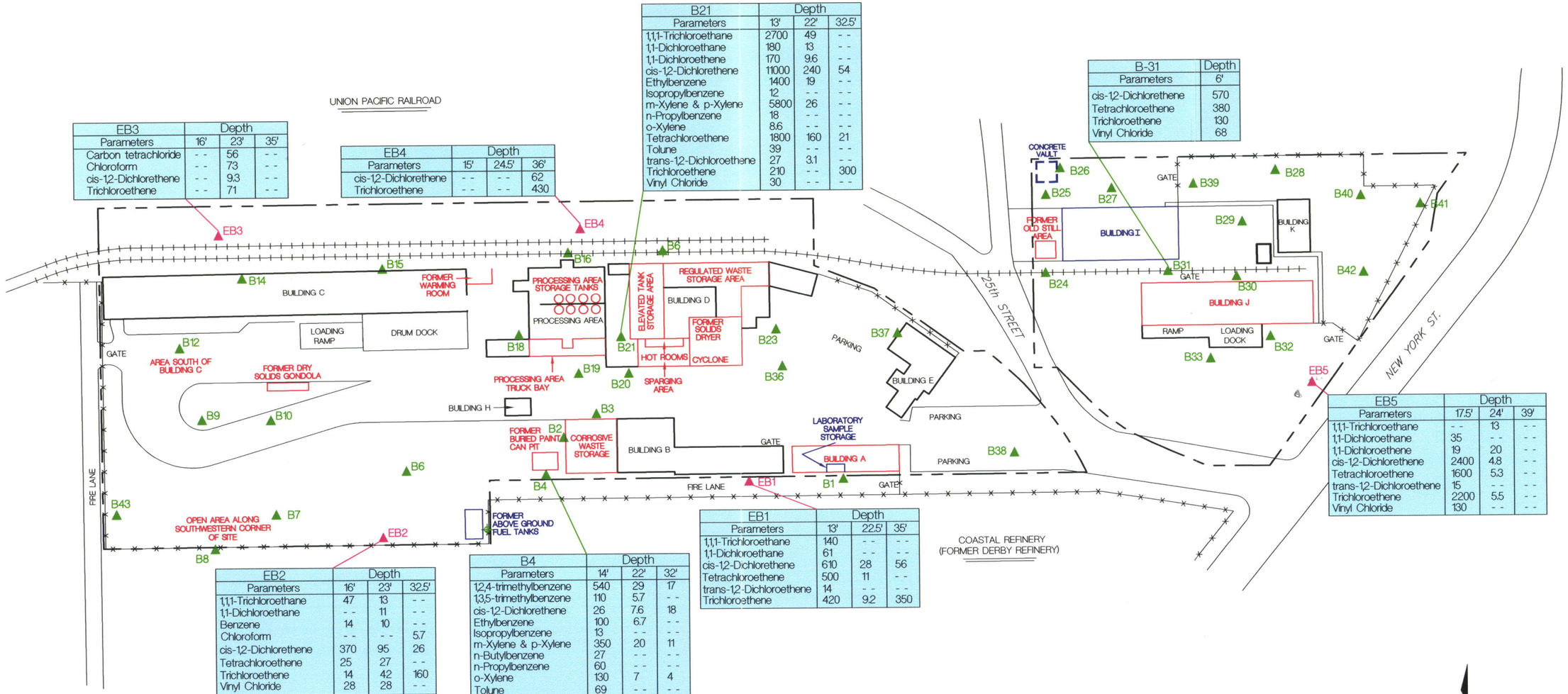
FIGURE 5

# SAFETY-KLEEN - (WICHITA) FACILITY

## PROPOSED MONITORING WELL NETWORK AND POTENTIOMETRIC SURFACE MAP (DECEMBER 1999)

SCALE: 1" = 100'

DWG. NO: 963231-0023




| EB3 | Depth | | |
|---|---|---|---|
| Parameters | 16' | 23' | 35' |
| Carbon tetrachloride | - - | 56 | - - |
| Chloroform | - - | 73 | - - |
| cis-1,2-Dichlorethene | - - | 9.3 | - - |
| Trichloroethene | - - | 71 | - - |

| EB4 | Depth | | |
|---|---|---|---|
| Parameters | 15' | 24.5' | 36' |
| cis-1,2-Dichlorethene | - - | - - | 62 |
| Trichloroethene | - - | - - | 430 |

| B21 | Depth | | |
|---|---|---|---|
| Parameters | 13' | 22' | 32.5' |
| 1,1,1-Trichloroethane | 2700 | 49 | - - |
| 1,1-Dichloroethane | 180 | 13 | - - |
| 1,1-Dichloroethene | 170 | 9.6 | - - |
| cis-1,2-Dichlorethene | 11000 | 240 | 54 |
| Ethylbenzene | 1400 | 19 | - - |
| Isopropylbenzene | 12 | - - | - - |
| m-Xylene & p-Xylene | 5800 | 26 | - - |
| n-Propylbenzene | 18 | - - | - - |
| o-Xylene | 8.6 | - - | - - |
| Tetrachloroethene | 1800 | 160 | 21 |
| Tolune | 39 | - - | - - |
| trans-1,2-Dichloroethene | 27 | 3.1 | - - |
| Trichloroethene | 210 | - - | 300 |
| Vinyl Chloride | 30 | - - | - - |

| B-31 | Depth |
|---|---|
| Parameters | 6' |
| cis-1,2-Dichlorethene | 570 |
| Tetrachloroethene | 380 |
| Trichloroethene | 130 |
| Vinyl Chloride | 68 |

| EB5 | Depth | | |
|---|---|---|---|
| Parameters | 17.5' | 24' | 39' |
| 1,1,1-Trichloroethane | - - | 13 | - - |
| 1,1-Dichloroethane | 35 | - - | - - |
| 1,1-Dichloroethene | 19 | 20 | - - |
| cis-1,2-Dichlorethene | 2400 | 4.8 | - - |
| Tetrachloroethene | 1600 | 5.3 | - - |
| trans-1,2-Dichloroethene | 15 | - - | - - |
| Trichloroethene | 2200 | 5.5 | - - |
| Vinyl Chloride | 130 | - - | - - |

| EB1 | Depth | | |
|---|---|---|---|
| Parameters | 13' | 22.5' | 35' |
| 1,1,1-Trichloroethane | 140 | - - | - - |
| 1,1-Dichloroethane | 61 | - - | - - |
| cis-1,2-Dichlorethene | 610 | 28 | 56 |
| Tetrachloroethene | 500 | 11 | - - |
| trans-1,2-Dichloroethene | 14 | - - | - - |
| Trichloroethene | 420 | 9.2 | 350 |

| EB2 | Depth | | |
|---|---|---|---|
| Parameters | 16' | 23' | 32.5' |
| 1,1,1-Trichloroethane | 47 | 13 | - - |
| 1,1-Dichloroethane | - - | 11 | - - |
| Benzene | 14 | 10 | - - |
| Chloroform | - - | - - | 5.7 |
| cis-1,2-Dichlorethene | 370 | 95 | 26 |
| Tetrachloroethene | 25 | 27 | - - |
| Trichloroethene | 14 | 42 | 160 |
| Vinyl Chloride | 28 | 28 | - - |

| B4 | Depth | | |
|---|---|---|---|
| Parameters | 14' | 22' | 32' |
| 1,2,4-trimethylbenzene | 540 | 29 | 17 |
| 1,3,5-trimethylbenzene | 110 | 5.7 | - - |
| cis-1,2-Dichlorethene | 26 | 7.6 | 18 |
| Ethylbenzene | 100 | 6.7 | - - |
| Isopropylbenzene | 13 | - - | - - |
| m-Xylene & p-Xylene | 350 | 20 | 11 |
| n-Butylbenzene | 27 | - - | - - |
| n-Propylbenzene | 60 | - - | - - |
| o-Xylene | 130 | 7 | 4 |
| Tolune | 69 | - - | - - |
| Trichloroethene | 39 | 56 | 120 |

## LEGEND

- : SWMU Locations
- : AOC Locations
- B-1 ▲ SOIL BORING LOCATION
- EB-1 ▲ ELECTRICAL CONDUCTIVITY PROBE LOCATION
- - - NOT DETECTED

North

0 100

FEET

NOTE: SURVEYED TO STATE PLANE COORDINATE SYSTEM

| | BY | DATE |
|---|---|---|
| DRAWN | CJJ | 3-14-00 |
| CHECKED | | |
| APPROVED | | |
| APPROVED | | |
| APPROVED | | |

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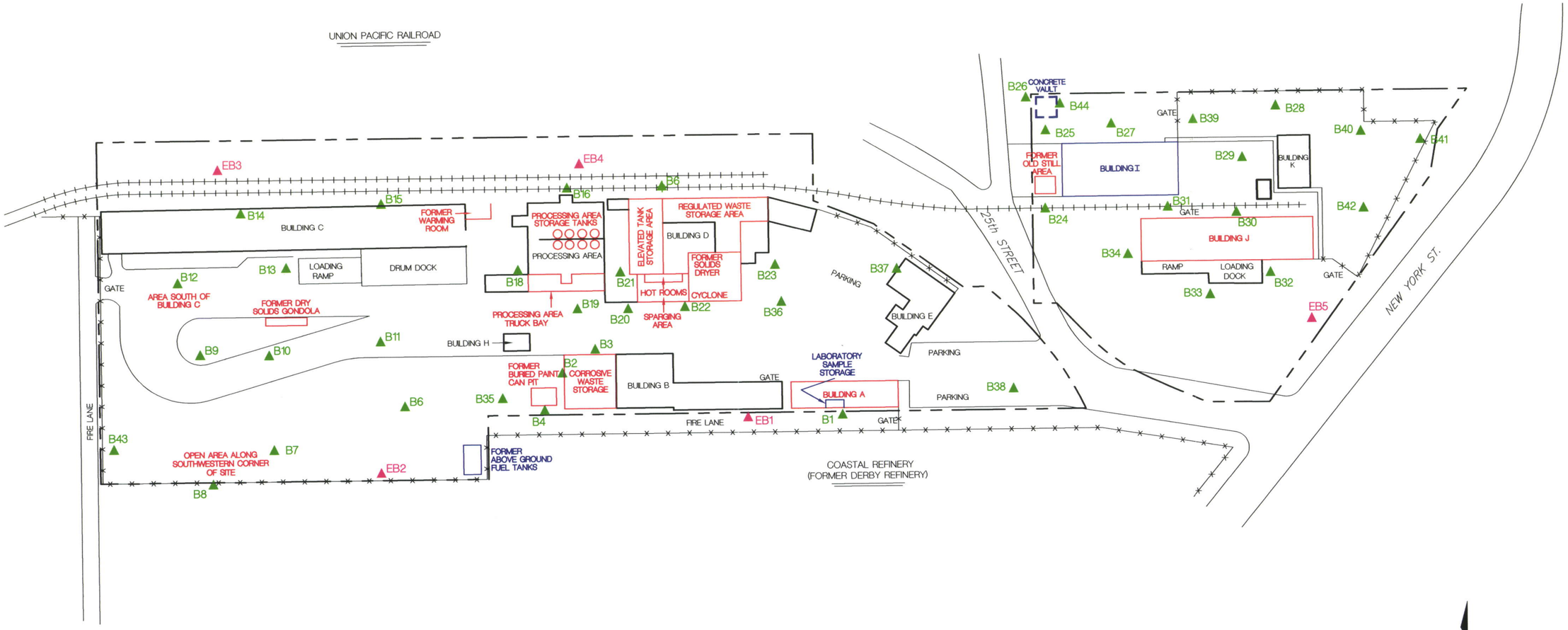
# SAFETY-KLEEN - (WICHITA) FACILITY

## FIGURE 6
## VOCs CONCENTRATIONS IN GROUNDWATER (ug/L)

SCALE: 1" = 100'

DWG. NO.: 963231-0022




## LEGEND

- : SWMU Locations
- : AOC Locations
- B-1 ▲ SOIL BORING LOCATION
- EB-1 ▲ ELECTRICAL CONDUCTIVITY PROBE LOCATION

North

0 100

FEET

NOTE: SURVEYED TO STATE PLANE COORDINATE SYSTEM

| | BY | DATE |
|---|---|---|
| DRAWN | CJJ | 3-07-00 |
| CHECKED | | |
| APPROVED | | |
| APPROVED | | |
| APPROVED | | |

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# SAFETY-KLEEN - (WICHITA) FACILITY

## FIGURE 7
## DATA LOCATION MAP

SCALE: 1" = 100'

DWG. NO: 963231-0021